

The invention claimed is:

1. A method of manufacturing an optical waveguide preform, comprising:  
forming a preform including a first portion and a second portion, the second  
5 portion including a dopant therein, and wherein the first portion exhibits a density  
greater than the second portion; and  
stripping the dopant from at least a section of the second portion.

2. The method of claim 1 wherein the dopant stripped from the section originated  
10 from dopant migration in a previous step.

3. The method of claim 1 wherein the dopant in the second portion comprises  
fluorine.

4. The method of claim 3 wherein the dopant in the second portion comprises an  
15 average weight percent of at least 0.3% fluorine substantially throughout the second  
portion prior to the step of stripping.

5. The method of claim 4 wherein the step of stripping is accomplished by a  
20 stripping agent.

6. The method of claim 5 wherein the stripping agent comprises a compound  
including an element selected from a group consisting of VA and VIA in the periodic  
table of elements.

7. The method of claim 6 wherein the stripping agent is selected from a group including phosphorous oxychloride, phosphorous trichloride, sulfur oxychloride, antimony, arsenic, chlorides and oxychlorides.

5 8. The method of claim 7 wherein the step of forming the preform body includes doping the first portion with germanium.

9. The method of claim 8, further including:

10 applying heat to the first portion prior to forming the second portion, thereby causing at least a portion of the first portion to have a greater density than the second portion.

15 10. The method of claim 9 wherein the heat applying step includes heating the first portion with a flame generated utilizing at least one fuel selected from a group including oxygen, methane and oxygen, carbon monoxide and oxygen, deuterium, and hydrogen.

11. The method of claim 9 wherein the heat applying step includes heating the first portion with a CO<sub>2</sub> laser.

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12. The method of claim 9 wherein the heat applying step includes heating the first portion with a plasma torch.

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13. The method of claim 9 wherein the heat applying step is accomplished within the range of from about 1500°C to about 1700°C.

14. The method of claim 9 wherein the heat applying step includes forming a glass barrier between the first portion and the second portion.

15. The method of claim 9 further including:  
drying the first and second portions with a drying agent.

16. The method of claim 15 wherein the drying step includes selecting the drying agent from a group including chlorine, germanium chloride, germanium tetrachloride, silicate tetrachloride, and combinations thereof.

17. The method of claim 15 further including:  
partially sintering the first and second portions prior to the stripping step.

18. The method of claim 1 wherein the step of stripping is accomplished by a stripping agent that includes an element selected from a group consisting of VA and VIA in the periodic table of elements.

19. The method of claim 1, wherein the step of forming the preform body includes doping the first portion with germanium.

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20. The method of claim 1, further including:

applying heat to the first portion prior to forming the second portion, thereby causing at least a portion of the first portion to have a greater density than the second portion.

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21. The method of claim 20, wherein the heat applying step includes forming a glass barrier between the first portion and the second portion.

22. The method of claim 21, further including:

drying the first and second portions with a drying agent.

23. The method of claim 22, further including:

partially sintering the first and second portions prior to the stripping step.

24. The method of claim 1 wherein the stripping step includes stripping nearly all of the dopant from a section of the second portion.

25. The method of claim 1 wherein the step of stripping includes stripping substantially all migrated dopant from an outer section of the second portion.

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26. A method of manufacturing an optical fiber preform, comprising:

forming a preform including a moat and radial portion abutting the moat, wherein the moat and the radial portion include a fluorine dopant; and stripping substantially all the fluorine dopant from the radial portion.

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27. The method of claim 26 wherein the step of stripping is accomplished by a stripping agent.

5 28. The method of claim 27 wherein the stripping agent comprises a compound including an element selected from a group including VA and VIA in the periodic table of elements.

10 29. The method of claim 28 wherein the stripping agent includes selecting the stripping agent from a group including phosphorous oxychloride, phosphorous trichloride, sulfur oxychloride, antimony, arsenic, chlorides and oxychlorides.

15 30. The method of claim 29 wherein the preform forming step includes forming the preform to include a core region surrounded by the moat.

31. The method of claim 30, further including:

applying heat to the core region prior to forming the moat, thereby causing the core region to have at least a portion exhibiting a greater density than the moat.

20 32. The method of claim 31 wherein the heat applying step includes heating the core region with a flame generated utilizing at least one fuel selected from a group including oxygen, methane and oxygen, carbon monoxide and oxygen, deuterium, and hydrogen.

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33. The method of claim 31 wherein the heat applying step includes heating the core region with a CO<sub>2</sub> laser.

34. The method of claim 31 wherein the heat applying step includes heating the core region with a plasma torch.

35. The method of claim 31 wherein the heat applying step includes forming a glass barrier between the core region and the moat.

36. The method of claim 31, further including:  
drying the preform body with a drying agent.

37. The method of claim 36 wherein the drying step includes selecting the drying agent from a group including chlorine, germanium chloride, germanium tetrachloride, silicate tetrachloride, and combinations thereof.

38. The method of claim 31, further including:  
partially sintering the preform prior to the stripping step.

39. The method of claim 26 wherein the step of stripping is accomplished by a stripping agent comprising a compound including an element selected from a group including VA and VIA in the periodic table of elements.

40. The method of claim 26 wherein the preform body forming step includes forming the preform body to include a core region surrounded by the moat.

41. The method of claim 40, further including:

5           applying heat to the core region prior to forming the moat, thereby causing the  
core region to have at least a portion exhibiting a greater density than the moat.

42. The method of claim 41, further including:

drying the preform body with a drying agent.

43. The method of claim 42, further including:

partially sintering the preform body prior to the stripping step.

44. The method of claim 26 wherein the dopant in the radial portion is provided as a result of migration of the dopant from the moat.

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